

FIG. 1

- (160) SPEED CONTROLLER
- (110) HIGH FREQUENCY GENERATOR AND MAGNETIC FLUX REGULATOR
- (170) CURRENT CONTROLLER
- (180) FREQUENCY REMOVER
- (120) MAGNETIC FLUX OBSERVER
- (130) HIGH FREQUENCY COMPONENT EXTRACTOR
- (136) INITIAL MAGNETIC POLE POSITION ESTIMATOR
- (190) COORDINATE TRANSFORMER
- (191) COORDINATE TRANSFORMER
- (135) ROTOR POSITION ESTIMATOR
- (140) HYBRID DEVICE
- (102) VOLTAGE TYPE INVERTER
- (150) SPEED ESTIMATOR
- (101) AC MOTOR

FIG. 2

- (211) SIGNAL ATTENUATOR
- (212) SIGNAL ATTENUATOR
- (230) SUPERPOSED FREQUENCY COMPONENT REMOVER
- (223) MAGNETIC FLUX QUANTITY CALCULATOR
- (224) MAGNETIC FLUX POSITION CALCULATOR

FIG. 3

- (130) HIGH FREQUENCY COMPONENT EXTRACTOR
- (310) SUPERPOSED FREQUENCY COMPONENT EXTRACTING UNIT
- (311) COORDINATE TRANSFORMER
- (312) BAND-PASS FILTER
- (320) MAGNETIC FLUX POSITION ERROR SIGNAL CALCULATING UNIT
- (321) SERIAL PARALLEL CONVERTING UNIT
- (322) AMPLITUDE CALCULATOR
- (323) AMPLITUDE CALCULATOR

FIG. 4

- (410) HYBRID DEVICE
- (432) SIGNAL ATTENUATOR
- (450) SPEED ESTIMATOR

FIG. 5

- (556) SERIAL PARALLEL CONVERTING UNIT
- (510) MAPPING TABLE
- (520) MAPPING TABLE
- (560) MAPPING TABLE
- (515) PARALLEL SERIAL CONVERTING UNIT

FIG. 8

- (860) SPEED CONTROLLER
- (810) HIGH FREQUENCY GENERATOR AND MAGNETIC FLUX REGULATOR
- (870) CURRENT CONTROLLER
- (820) MAGNETIC FLUX OBSERVER
- (830) HIGH FREQUENCY COMPONENT EXTRACTOR
- (835) INITIAL MAGNETIC POLE POSITION ESTIMATOR
- (890) COORDINATE TRANSFORMER
- (891) COORDINATE TRANSFORMER
- (802) VOLTAGE TYPE INVERTER
- (801) AC MOTOR
- (850) SPEED ESTIMATOR
- ROTOR POSITION ESTIMATOR
- HYBRID DEVICE

FIG. 9

- (910) SUPERPOSED FREQUENCY COMPONENT EXTRACTING UNIT
- (911) COORDINATE TRANSFORMER
- (912) BAND-PASS FILTER
- (920) MAGNETIC FLUX POSITION ERROR SIGNAL CALCULATING UNIT
- (921) SERIAL PARALLEL CONVERTING UNIT
- (922) AMPLITUDE CALCULATOR

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(921) AMPLITUDE CALCULATOR

FIG. 10

- (996) SERIAL PARALLEL CONVERTING UNIT
- (950) MAPPING TABLE
- (970) MAPPING TABLE
- (975) MAPPING TABLE
- (965) PARALLEL SERIAL CONVERTING UNIT

FIG. 11

- ① A REGION : TRACK OF DOUBLE HARMONIC OBTAINED WHEN HIGH FREQUENCY SIGNAL IS SUPERPOSED IN DIRECTION OF D-AXIS
- ② B REGION : TRACK OF DOUBLE HARMONIC OBTAINED WHEN HIGH FREQUENCY SIGNAL IS SUPERPOSED IN DIRECTION OF -D AXIS

FIG. 12

SERIAL PARALLEL CONVERTING UNIT

FIG. 13

- (160) SPEED CONTROLLER
- (110) HIGH FREQUENCY GENERATOR AND MAGNETIC FLUX REGULATOR
- (170) CURRENT CONTROLLER
- (180) FREQUENCY REMOVER
- (120) MAGNETIC FLUX OBSERVER
- (130) HIGH FREQUENCY COMPONENT EXTRACTOR
- (190) COORDINATE TRANSFORMER
- (191) COORDINATE TRANSFORMER
- (140) HYBRID DEVICE
- (102) VOLTAGE TYPE INVERTER
- (150) SPEED ESTIMATOR
- (101) AC MOTOR

FIG. 14

- (230) SUPERPOSED FREQUENCY COMPONENT REMOVER
- (233) SIGNAL ATTENUATOR
- (234) SIGNAL ATTENUATOR
- (223) MAGNETIC FLUX QUANTITY CALCULATOR
- (222) MAGNETIC FLUX POSITION CALCULATOR

FIG. 15

- (432) SIGNAL ATTENUATOR

FIG. 16

- (556) SERIAL PARALLEL CONVERTING UNIT
- (520) DEPENDING ON MECHANICAL CHARACTERISTIC
- (515) PARALLEL SERIAL CONVERTING UNIT

FIG. 17

- (860) SPEED CONTROLLER
- (810) HIGH FREQUENCY GENERATOR AND MAGNETIC FLUX REGULATOR
- (870) CURRENT CONTROLLER
- (820) MAGNETIC FLUX OBSERVER
- (830) HIGH FREQUENCY COMPONENT EXTRACTOR
- (890) COORDINATE TRANSFORMER
- (891) COORDINATE TRANSFORMER
- (840) HYBRID DEVICE
- (802) VOLTAGE TYPE INVERTER
- (850) SPEED ESTIMATOR
- (801) AC MOTOR

FIG. 18

- (996) SERIAL PARALLEL CONVERTING UNIT
- (970) DEPENDING ON MECHANICAL CHARACTERISTIC
- (965) PARALLEL SERIAL CONVERTING UNIT